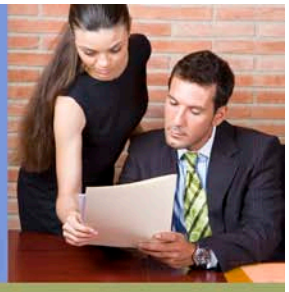
MAINE DEPARTMENT OF LABOR

Research Brief

Center for Workforce Research and Information



May 2011

The Changing Need for Educated Maine Workers

Maine employers face potential labor supply shortages despite current labor market conditions. Not only will a sufficient number of workers be needed which is problematic given expected slow population growth, the workforce needs to have the right skills. A concern of employers is that there will be a lack of skilled workers to fill jobs as the economy recovers. The purpose of this research brief is to determine how the need for skilled workers by industry has changed. Educational attainment is the proxy for skill level.

Decennial Census and American Community Survey data in this brief comes from the Integrated Census Public Use Microdata Series. These data are subject to sampling error, and detailed estimates by education and industry must be viewed with caution. The data are best interpreted as trend estimates.

Educational attainment is rising. Between 1990 and 2009 the educational attainment of Maine workers rose. Over 50 percent of the employed had a high school education or less in 1990; by 2009 workers with this level of attainment had dropped to less than 40 percent of the total. Conversely, the percentage of the employed with at least some college education has risen, accounting for over 60 percent of total employment, up from 48 percent for 1990.

Educational Attainment of Employed Maine Residents (Percent of Total Employment)

Year	High School or Less	Some College or Associate's Degree	Bachelor's Degree or Higher
1990	52.2	26.9	20.9
2000	44.9	29.9	25.2
2001	46.3	29.5	24.3
2002	44.8	29.2	25.9
2003	44.0	28.9	27.1
2004	43.6	29.6	26.8
2005	42.7	31.1	26.2
2006	42.1	30.2	27.6
2007	40.9	30.7	28.5
2008	40.0	34.1	25.9
2009	36.9	33.7	29.4

Source: Integrated Public use Microdata Series, 1990 and 2000 Census, 2009 American Community Survey.

The increase in educational attainment of Maine workers is the result of changes in employment by industry and changes in employment within industries. Employment has shifted towards industries that employ a greater share of educated workers and the employment of these workers has grown within industries.

Knowledge-based industry employment is increasing. Between 1990 and 2010, employment fell in the goods-producing sector and rose in the service-providing sector. Knowledge-based industries recording major gains included education and health services and professional and business services –

Maine Nonfarm Wage and Salary Employment (in thousands)

Industry	1990	2010	Change	
			Net	Percent
Nonfarm Wage and Salary Employment	535.0	592.5	57.5	10.7
Natural Resources and Mining	3.3	2.6	-0.7	-21.2
Construction	28.8	24.3	-4.5	-15.6
Manufacturing	93.0	50.9	-42.1	-45.3
Wholesale Trade	18.2	19.0	0.8	4.4
Retail Trade	75.3	81.1	5.8	7.7
Transportation, Warehousing, and Utilities	18.8	16.8	-2.0	-10.6
Information	10.2	9.1	-1.1	-10.8
Financial Activites	26.5	31.3	4.8	18.1
Professional and Business Services	33.6	55.6	22.0	65.5
Education and Health Services	66.4	119.0	52.6	79.2
Leisure and Hospitality	47.8	59.8	12.0	25.1
Other Services	17.3	19.8	2.5	14.5
Government	95.8	103.4	7.6	7.9

Source: Maine Department of Labor, Center for Workforce Research and Information.

industries that generally depend on a higher level of skills. Nonfarm wage and salary employment estimates produced by the Center for Workforce Research and Information (which excludes the self employed and agricultural workers) confirm Census data trends for total employment by industry used in this brief.

Industries recording employment gains between 1990 and 2009 currently employ a larger share of workers with a bachelor's degree or higher than industries with substantial employment losses. The education, health, business, and professional services industries all had a higher-than-average percentage of workers at the bachelor's degree or higher level. Conversely, manufacturing and construction had a lower-than-average percentage of workers at the bachelor's degree or higher level.

Percent Distribution of Educational Attainment by Industry of Employed Maine Residents in 2009

Industry	High School or Less	Some College or Associate's Degree	Bachelor's Degree or Higher
Educational Services	16.1	21.8	62.2
Professional Services	18.1	22.2	59.7
Government	16.2	39.2	44.5
Finance, Insurance, and Real Estate	25.4	32.6	42.0
Social Services	25.1	34.4	40.5
Health Services	24.1	40.2	35.7
Business Services	29.1	39.3	31.6
Wholesale Trade	45.3	26.4	28.4
All Other Services	43.4	31.6	25.0
Transportation, Communication, and Public Utilities	41.3	35.7	23.0
Agriculture, Forestry, Fishery	58.5	23.6	17.9
Manufacturing	48.6	34.9	16.5
Retail Trade	49.2	37.9	12.9
Mining and Construction	57.2	32.4	10.5
Total	**36.9**	**33.7**	**29.4**

Source: Integrated Public Use Microdata Series, 2009 American Community Survey.

Notes: Industry coding based on 1990 Census codes.

Educational attainment of workers within industries is rising. The share of the total number of employed within each major industry division with an educational attainment of bachelor's degree or higher increased while the share of workers with a high school education or less fell between 1990 and 2009. Employment of workers with some college or associate's degree as a share of total employment rose over the past nineteen years in most of the industry divisions. Wholesale trade; finance, insurance, and real estate; and professional services experienced a share loss of workers with educational attainment of high school or less and some college or associate's degree while, with the exception of government, recording the largest share gains of workers with a bachelor's degree or higher.

Change in Share of Educational Attainment by Industry of Employed Maine Residents 1990-2009 (in percentage points)

Industry	High School or Less	Some College or Associate's Degree	Bachelor's Degree or Higher
Government	-18.2	1.4	16.8
Wholesale Trade	-13.5	-2.8	16.3
Finance, Insurance, and Real Estate	-12.1	-1.7	13.8
Professional Services	-4.9	-8.6	13.4
Business Services	-19.2	7.3	11.9
Transportation, Communication, and Public Utilities	-14.2	4.7	9.5
Health Services	-11.5	2.5	9.0
Social Services	-14.2	6.6	7.7
All Other Services	-10.6	5.0	5.7
Agriculture, Forestry, Fishery	-9.2	3.9	5.3
Manufacturing	-17.7	12.9	4.8
Retail Trade	-14.5	11.5	3.0
Educational Services	-6.2	3.6	2.6
Mining and Construction	-10.3	9.7	0.6
Total	**-15.3**	**6.8**	**8.5**

Source: Integrated Public Use Microdata Series, 1990 and 2000 Census, 2009 American Community Survey.

Notes: Industry coding based on 1990 Census codes. Numbers may not add due to rounding.

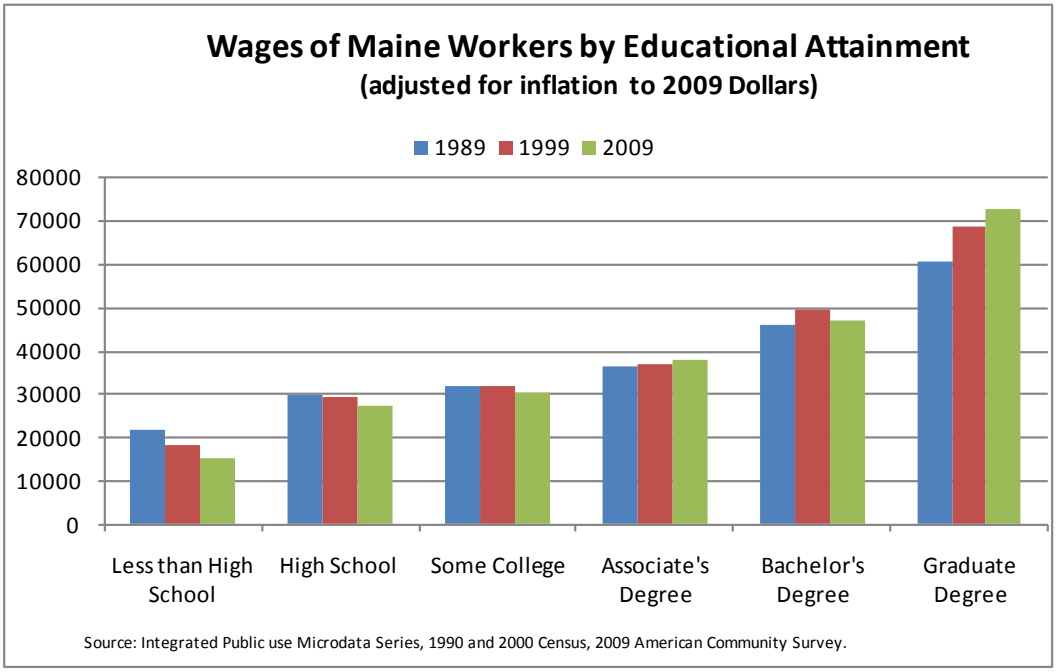
Wage growth indicates increased demand for skilled workers. It is difficult to assess the demand for skilled workers, particularly in the midst of a slow recovery from the Great Recession. With the current surplus of labor available, employers may find it easier to hire qualified workers. On the other hand, it may be difficult to find individuals with the right qualifications, even in times of high unemployment, if changing needs of the employer are not matched with skills of the available workforce.

Changes in real wages (wages adjusted for inflation) provide one measure of the demand for educated workers relative to the supply. Rising wages would indicate the demand for educated workers is increasing relative to the number available. On the other hand, falling wages would reflect declining demand relative to supply.

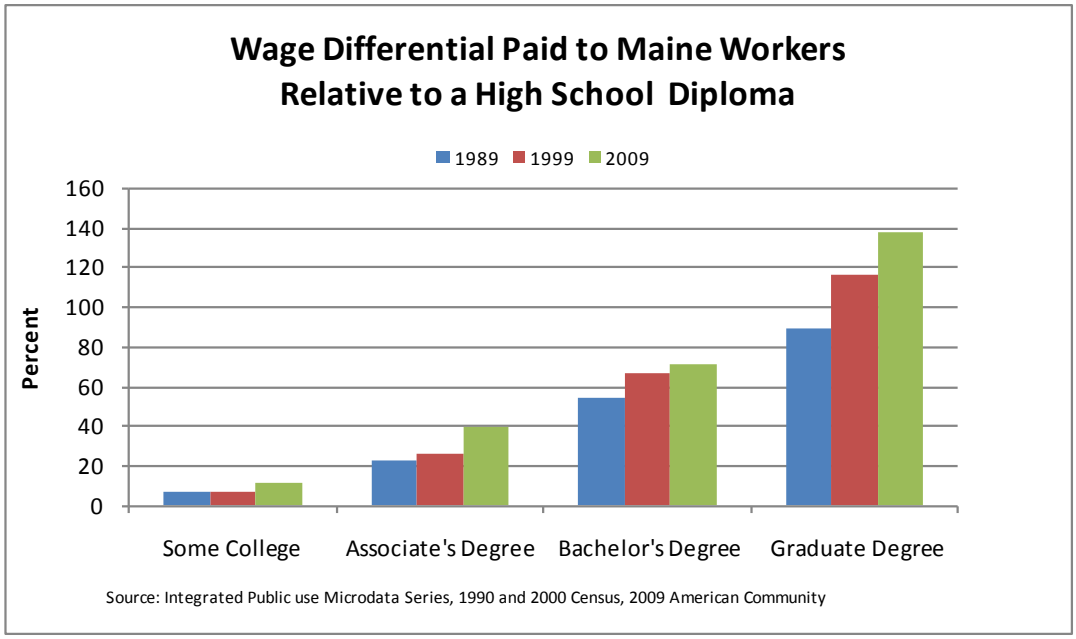
The price of wage and salary workers as measured by annual average real wages increased for workers in all educational categories above some college between 1989 and 2009, suggesting that demand grew more rapidly than supply. These gains ranged from an increase of two percent for workers with a bachelor's degree to 20 percent for workers with a graduate degree. Those with a bachelor's or graduate degree had the most substantial gains in the 1990s; workers with an associate's degree had a larger gain in the 2000s. For workers with a high school education or less, average wages dropped between 1989 and 2009.

The mid-to-late 1990s were characterized by rapid employment growth and low unemployment. Reflecting this tight labor market, workers with an educational attainment of associate's degree or higher recorded a gain in real wages between 1989 and 1999. Workers with a graduate degree recorded the highest rate of wage growth (14 percent).

The late 2000s was a period of employment decline and higher unemployment. In all categories, with the exception of associate's degree, wage growth slowed or wages declined between1999 and 2009. Workers with a graduate degree once again recorded the highest rate of wage growth (5 percent) – a reduced rate of growth from the 1990s. Workers with an associate's degree were the only group to register a faster rate of wage growth during the 2000s, three percent, compared to one percent during the 1990s. This suggests that the demand for workers with an associate's degree rose relative to the supply of workers available.



Resulting from wage trends by educational attainment, real wages paid to workers with post-secondary education increased relative to wages for workers with a high school education. For example, workers with a bachelor's degree earned 54 percent more than a worker with a high school diploma in 1989; by 2009 the difference had grown to 72 percent. Every post-secondary educational category recorded an increase in wages between 1989 and 2009 relative to workers with a high school education.



The reduced role of the manufacturing sector, the increased importance of knowledge-based services, technological advances, international competition, and other factors have all contributed to changing the way work is done. Maine employers have responded by employing workers with more education. As evidenced by rising wages over the past 20 years, employers are willing to pay for that expertise. While a general lack of demand during the 2000s resulted in a slowdown in wage growth or wage decline for some educated workers, the premium employers pay workers who have an education surpassing high school will likely continue to increase in the future.

Source: All ACS and decennial Census data developed using the Integrated Public Use Microdata Series (IPUMS: Steven Ruggles, J. Trent Alexander, Katie Genadek, Ronald Goeken, Matthew B. Schroeder, and Matthew Sobek. Integrated Public Use Microdata Series, Version 5.0 (Machine-readable database). Minneapolis: University of Minnesota, 2010.